REMARKS

The Examiner is thanked for the thorough examination of the application. The specification has been amended to insert headings. No new matter is believed to be added to the application by this Amendment.

Status of the Claims

Claims 1, 3, 4 and 6-16 are pending in the application. Claims 2 and 5 have been canceled. The amendments to claim 1 finds support in canceled claim 2 and in, e.g., Figure 1. Claim 6 finds support in the specification at page 6, lines 3-4. Claim 7 finds support in the specification at page 10, line 21. Claim 8 finds support in the specification at page 6, lines 16-17. Claim 9 finds support in the specification at page 6, lines 12-14. Claim 10 corresponds to claim 1 and finds further support in the specification at pages 6 and 7. Claims 11-16 correspond to claims 3, 4 and 6-9, respectively.

Rejections Under 35 U.S.C. §§102(b)/103(a)

Claims 1-5 have been rejected under 35 U.S.C. §102(b) as being anticipated by Pelrine '769 (U.S. Publication 2002/0050769). Claims 1-3 and 5 have been rejected under 35 U.S.C. §102(b) as being anticipated by Pelrine '673 (U.S. Publication 2002/0130673). Claim 4 has been rejected under 35 U.S.C. §103(a) as being obvious over Pelrine '673. Applicants traverse.

The Present Invention And Its Advantages

The present invention pertains to a novel actuator that utilizes carbon nano fibers as an electrode material. Of the many embodiments of the invention, claim 1 describes a typical embodiment that combines the novel elements of providing electrodes on both faces of a flexible sheet member made of a polymer material. The electrodes are mainly made of carbon nano fibers. The carbon nano fibers of the electrodes rise with respect to the sheet member, and one end of the nano fibers bite into the sheet member.

Distinctions Of The Invention Over The Cited Art

Pelrine '769 pertains to electroactive polymer electrodes. At page 2 of the Office Action, the Examiner points to Figure 1A of Pelrine, which is a simple diagram showing electrodes **104, 106** on both faces of an electroactive polymer **102**. The Examiner then relies on paragraph **0128** of Pelrine '769, which describes that compliant electrodes are achieved using a high aspect ratio conductive material such as carbon fibrils and carbon nano tubes. The Examiner also quotes from paragraph **0128** of Pelrine '769: "High aspect ratio carbon materials may include the use of a polymer binder to increase adhesion with the electroactive polymer." The Examiner then asserts that this passage from Pelrine '769 indicates "that the electrodes are embedded to the polymer to some degree."

However, this passage of Pelrine '769 gives absolutely no teaching or suggestion that carbon nano tubes bite into the sheet member. Indeed, adhesives usually form a layer between the two materials to be bound, and there is thus no need for biting. If anything, this passage of Pelrine '769 can be construed as teaching away from the present invention for the above reasons.

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

That is, Pelrine '769 utterly fails to disclose or suggest the combination of elements including "the carbon nano fibers of said electrodes rise with respect to said sheet member, and one end of the carbon nano fibers bite into said sheet member," as is set forth in claim 1 of the present invention. Claims depending upon claim 1 are patentable for at least the above reasons.

Pelrine '673 pertains to electroactive polymer sensors. At page 3 of the Office Action, the Examiner points to Figure 2A of Pelrine '673 which is a simple diagram showing electrodes **104, 106** on both faces of an electroactive polymer **102** (and is identical to Figure 1A of Pelrine '769). The Examiner then points to paragraph **0105** of Pelrine '673, which is a verbatim duplicate of paragraph **0128** of Pelrine '769, which describes that compliant electrodes are achieved using a high aspect ratio conductive

material such as carbon fibrils and carbon nano tubes. The Examiner also quotes from paragraph **0105** of Pelrine '673: "High aspect ratio carbon materials may include the use of a polymer binder to increase adhesion with the electroactive polymer." The Examiner then asserts that this passage from Pelrine '673 indicates "that the electrodes are embedded to the polymer to some degree."

However, this passage of Pelrine '673 (similar to Pelrine '769) gives absolutely no teaching or suggestion that carbon nano tubes bite into the sheet member. Indeed, adhesives usually form a layer between the two materials to be bound, and there is thus no need for biting. If anything, this passage of Pelrine '673 can be construed as teaching away from the present invention for the above reasons.

That is, Pelrine '673 utterly fails to disclose or suggest the combination of elements including "the carbon nano fibers of said electrodes rise with respect to said sheet member, and one end of the carbon nano fibers bite into said sheet member," as is set forth in claim 1 of the present invention. Claims depending upon claim 1 are patentable for at least the above reasons.

At page 4 of the Office Action, the Examiner admits that Pelrine '673 fails to disclose use of a polymer material that is a silicone resin (claim 4 of the present invention). The Examiner then asserts that using a silicone resin would be obvious to one of ordinary skill. However, the Examiner fails to show where in the single reference of Pelrine '673 itself resides the teaching or suggestion to use silicone resin.

To establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP §2143. In addition, if a reference needs to be modified to achieve the claimed invention "there must be a showing of a suggestion or motivation to modify the teachings of that reference to the claimed invention in order to support the obviousness conclusion." Sibia Neurosciences Inc. v. Cadus Pharmaceutical Corp., 225 F.3d 1349, 55 USPQ2d 1927 (Fed. Cir. 2000).

As a result, the Examiner has failed to show that claim 4 of the present invention is *prima facie* obvious over Pelrine '673.

These rejections are overcome and withdrawal thereof is respectfully requested.

Information Disclosure Statement

The Examiner is thanked for considering the information Disclosure Statement filed April 5, 2004 and for making the initialed PTO-449 form of record in the application in the Office Action mailed December 5, 2005.

Prior Art

The prior art cited but not utilized by the Examiner indicates the status of the conventional art that the invention supersedes. Additional remarks are accordingly not necessary.

Foreign Priority

The Examiner has acknowledged foreign priority in the Office Action mailed December 5, 2005.

The Drawings

The Examiner has accepted the drawing figures in the Office Action mailed December 5, 2005.

Conclusion

The Examiner's rejections have been overcome, obviated or rendered moot. No issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petitions for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of $60.00 is attached hereto.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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